Remnants of a Late Jurassic detachment shear zone in the Monviso Meta-ophiolite Complex (Western Alps)

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REMNANTS OF A LATE JURASSIC DETACHMENT SHEAR ZONE IN THE MONVISO META-OPHIOLITE COMPLEX (WESTERN ALPS)

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The Monviso meta-ophiolite Complex is a major eclogitized remnant of the Ligurian–Piedmont oceanic lithosphere stacked in the Western Alps, and, despite the overprint of subduction- and collisional-related metamorphism and tectonics, displays exceptional records of its Jurassic rift-drift history.

In the Monviso meta-ophiolite Complex, serpentinized metaperidotite intruded by 163 ± 2 Ma metagabbros are exposed in the footwall of a major shear zone and are overlain by metabasalt and syn-extensional calcschist with ophiolite-derived detrital intercalations in the hanging wall. The shear zone consists of mylonitic serpentinite, sheared meta-ophicarbonate and talc-and-chlorite schist, representing a rock assemblage originally formed as a result of rock-fluid interactions between gabbros, serpentinite and seawater-derived hydrothermal fluids along an oceanic core complex–related detachment fault.

A Lower Cretaceous calcschist, marble, and quartz-schist metasedimentary assemblage unconformably overlies the footwall and hanging-wall units, representing a post-extensional sequence that do not display any evidence of deformation and metasomatic processes, as would be expected if shearing occurred during subduction or collisional Alpine-related stages.

The Monviso meta-ophiolite Complex represents an ancient oceanic core complex formed in an embryonic ocean (i.e., the Ligurian-Piedmont Ocean), and its heterogeneous lithostratigraphy and structural architecture may be a model for recognizing products of rift-drift processes in other (ultra)high-pressure belts worldwide.

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T217. Rift-Drift, Seafloor Spreading, and Subduction Zone Tectonics of Collisional Orogens: Comparative Analysis of the Circum-Mediterranean and Appalachian-Caledonian Orogenic Belts
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